Content Creation for Mobile Phones

Top 10 Success Factors

Session 720

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Top 10 Success Factors

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Introduction

- The goal with the session is to give an understanding of “all” the aspects of “wireless” content creation and distribution
- Business models
- Radio networks
- Content creation
- Content workflows
- Tools

How It All Started

- SMS
  - 1998 Europe/Asia
  - Enhanced SMS
- DoCoMo released iMode
  - 2000
  - Graphics, sound, animation etc.
- MMS
  - 2002
  - Graphics, sound, animation etc.
- Video
  - D/I
  - Streaming
- Video telephony

Business Models

- SMS
  - Operator services
  - 3rd part—Revenue sharing
  - Bit pipe
- MMS
  - Operator services
  - 3rd part—Revenue sharing
  - Bit pipe
- Video d/l and streaming
  - Operators are content creators?
  - Content/service suppliers—Revenue sharing?
  - Bit pipe?
- Video telephony
  - Time based

Networks

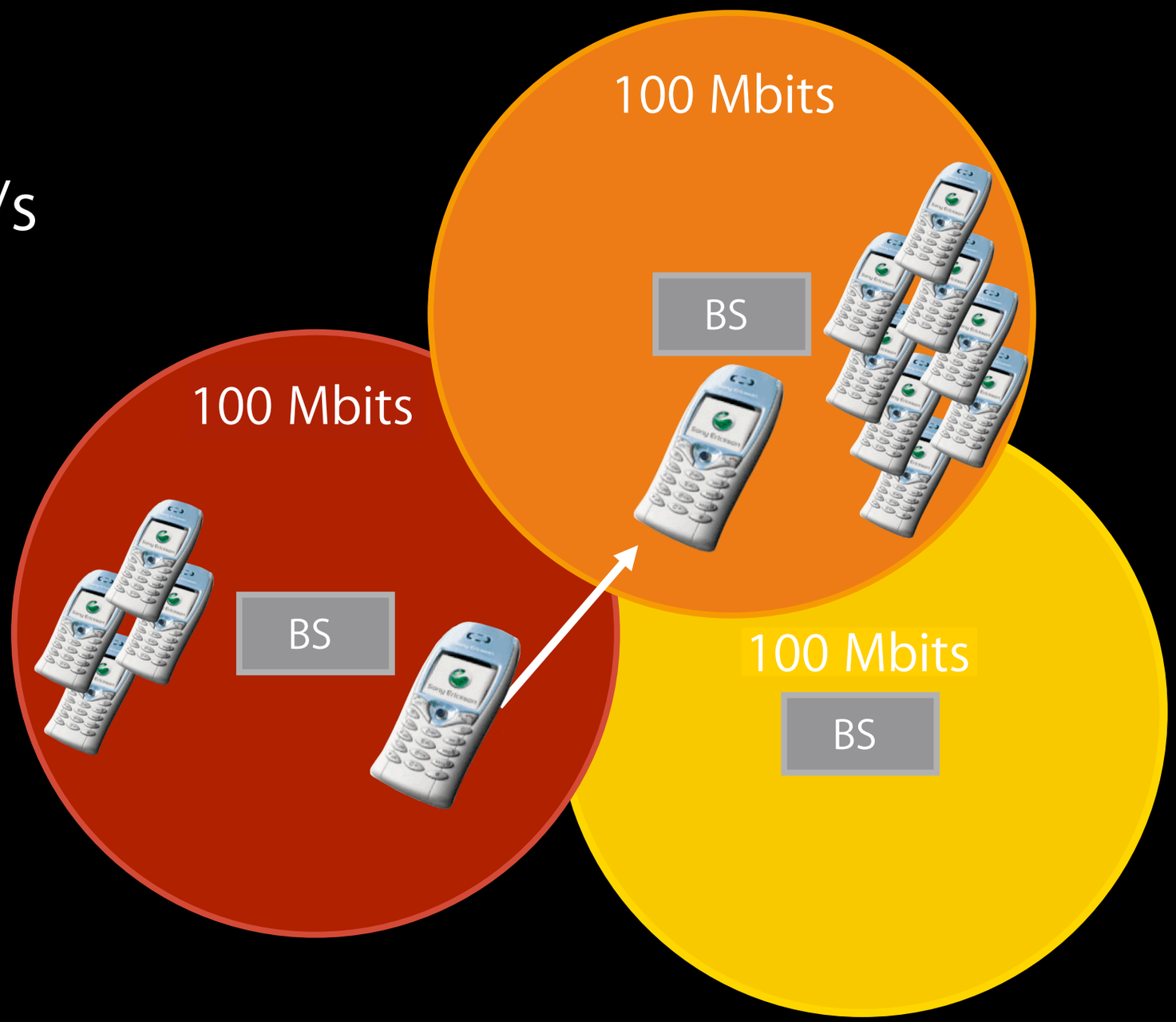
- 2G—9,6 kbps
  - GSM
  - CDMA
  - TDMA
- 2.5G—30 kbps
  - GPRS 171,2 kbps
  - HSCSD (High-Speed Circuit-Switched Data) 56 kbps/s
  - EDGE 474 kbps
- 3G (UMTS) 64kbps
  - WCDMA 2 mbps
  - CDMA2000 2 mbps

Services/Network

- 2G
  - Speech
  - SMS—communication, Infotainment
  - Ringtones
- 2.5G
  - MMS—enhanced “SMS” services with multimedia, education, entertainment, surveillance
  - Video—d/l, sports, news
  - Streaming—traffic, small clips—news, sports, etc.
- 3G
  - MMS—enhanced with video
  - Video—d/l
  - Streaming—traffic, news, sports, etc.
  - Video telephony

Radio Network

- Cells
- GPRS—time slots
- 1 time slot = 12Kbit/s
- 3 time slots typical
- Client is moving—
  2 time slot
- Clients move into the cell
- 3G - Bit rate



Delivery

Streaming

- GPRS
  - Timeslots 1 slot = 12Kbit/s
  - Low bit rate—typical 20-30K (2–3 time slots)
  - Prioritizing
  - Network congestion, packet loss
  - Latency—RTCP problem—short clips
- 3G
  - PDP context—best effort, dedicated
  - Network congestion, packet loss
  - Circuit switched—packet bearer
  - Bottlenecks—infrastructure
- Firewall!

3GPP File Format—.3gp

- 3rd Generation Partnership Program
- .3gp
  - Why it's own file format?
  - AMR
- MPEG-4 SVPL-0, H.263 Baseline, AMR NB, AMR WB, AAC LC, Timed Text
- SMIL 2.0 Basic—Presentation

3GPP

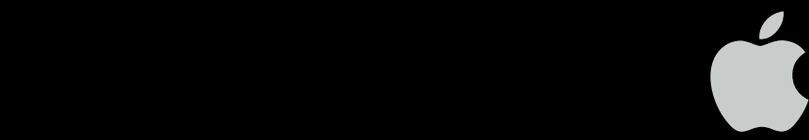
- MPEG-4 SVPL 0
  - Max 64Kbit
  - 1 object
- AAC
  - LATM Packetizing
- H.263 Baseline
- AMR

ISMA

- MPEG-4 SVPL 1
  - Max 64Kbit
  - 4 object
- AAC
  - Generic Packetizing
- MPEG-4 SVPL 1-3

Terminals

- All support 3GPP
- NOKIA—Real Player
  - Supports 3GPP
  - Streaming only in Real format
  - NOKIA 6600—supports streaming of both 3GPP and Real
- SonyEricsson
  - P800—Packet video player
  - Supports 3GPP
  - Streaming—3GPP and ISMA
- Qcif size



MMS—Explained

- Multimime formatted message
  - Like an email
- Formats
  - JPEG, GIF 89a, amr, SMIL
  - .3gp file
  - RTSP link
- Video message is NOT MMS
- Is distributed by an MMS-C
  - PPG—notification (sms/wap push)
  - Store and forward (like sms)

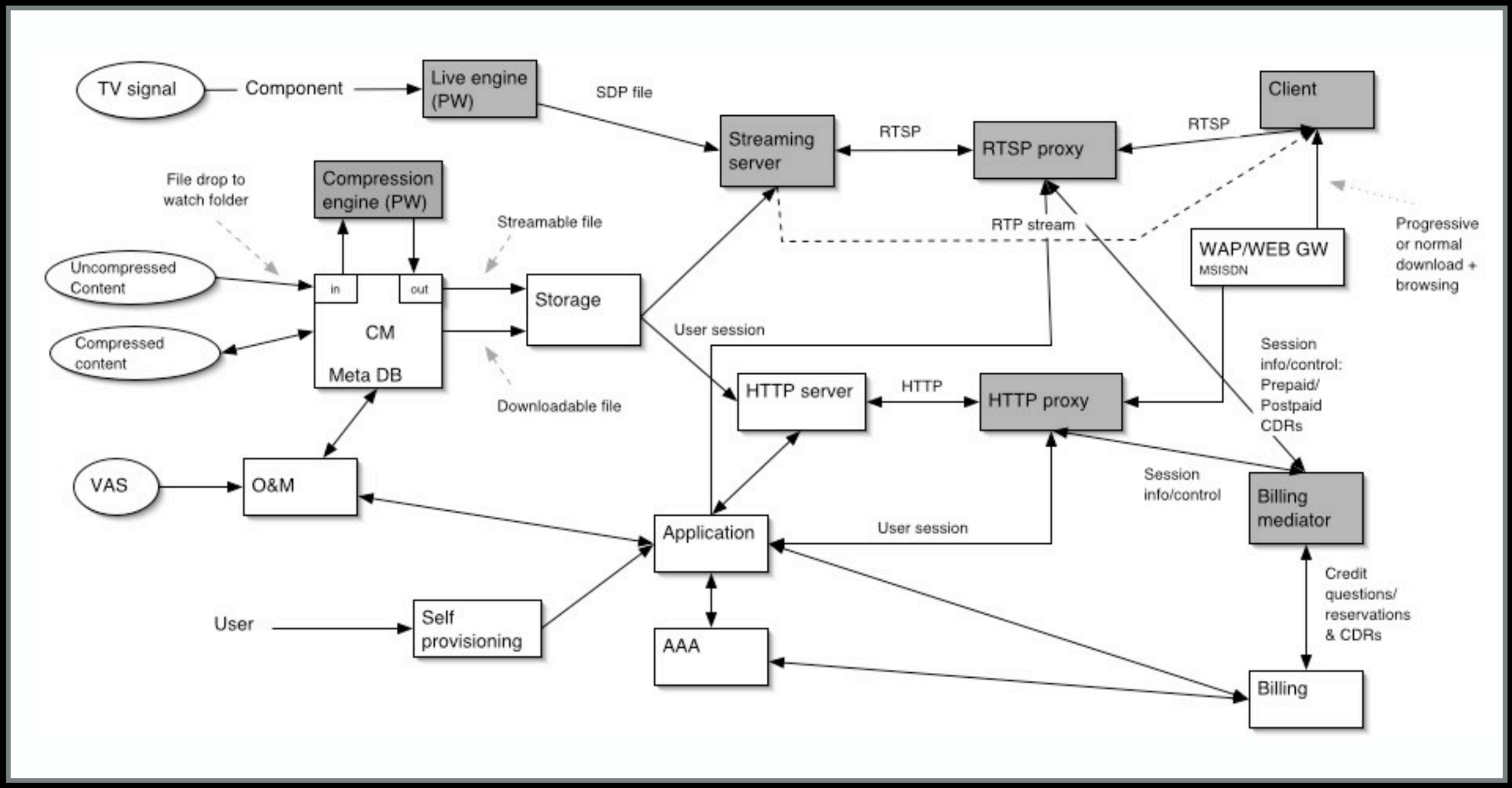
Content

Content

- How to get content
  - Not operators business
  - Asks the wrong question
  - Internet content is not adapted for wireless
- Production
  - Not made for mobile phones
  - Non “production formats”
- Rights
  - Only video not commentaries (sports)
- To drive business
  - Operators has to be “content creators”
  - Migrate the content creation to the actual content owners/distributors

High Level Architecture

Operator streaming environment

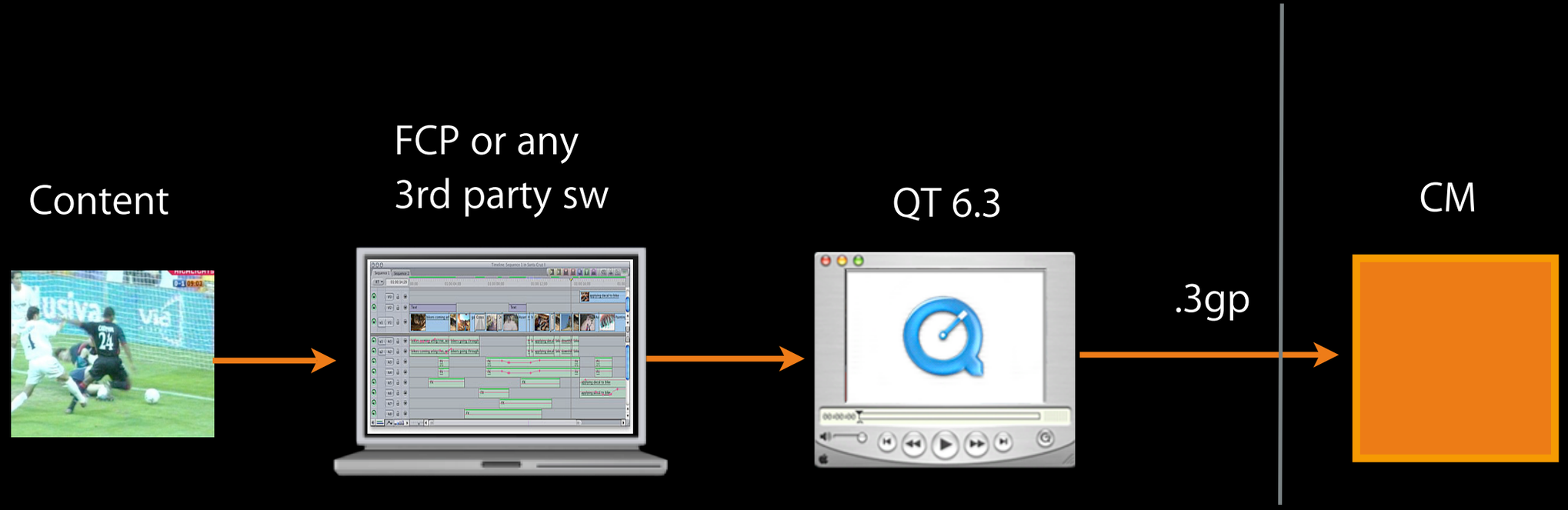


Creation

Small Operations

- Content is acquired
- Edited
- Encoded
- Distributed

Operators domain



Encoding for 3G/GPRS

- Low bandwidths <64Kbit/s
  - High quality content
  - Good quality codecs
  - High quality pre-processing
  - Reduce frame rate—to achieve better spatial quality
- Bandwidth constrains
  - CBR
  - VBV (Video Buffer Verifier)
  - Drop Frames, Natural keyframes
  - Error handling—packet size, RVLC (congestion)
- Short clips—30 sec—“short term until network capacity increases”
  - New users are prioritized in a cell
  - Speech has priority over data

Streaming Vs. D/L

- Streaming
  - Pros:
    - Memory capacity in phone limited
    - Less overhead in RTP than HTTP
    - “Lightweight” DRM in itself
    - Viewable in just 2–4 sec.
  - Cons:
    - Firewalls
    - Not supported by all phones present
- Download
  - Pros:
    - Supported by all phones
  - Cons:
    - Very few phones support Progressive d/l—needs to be fully d/l
    - Needs “large” storage on the phone

Streaming vs. D/L

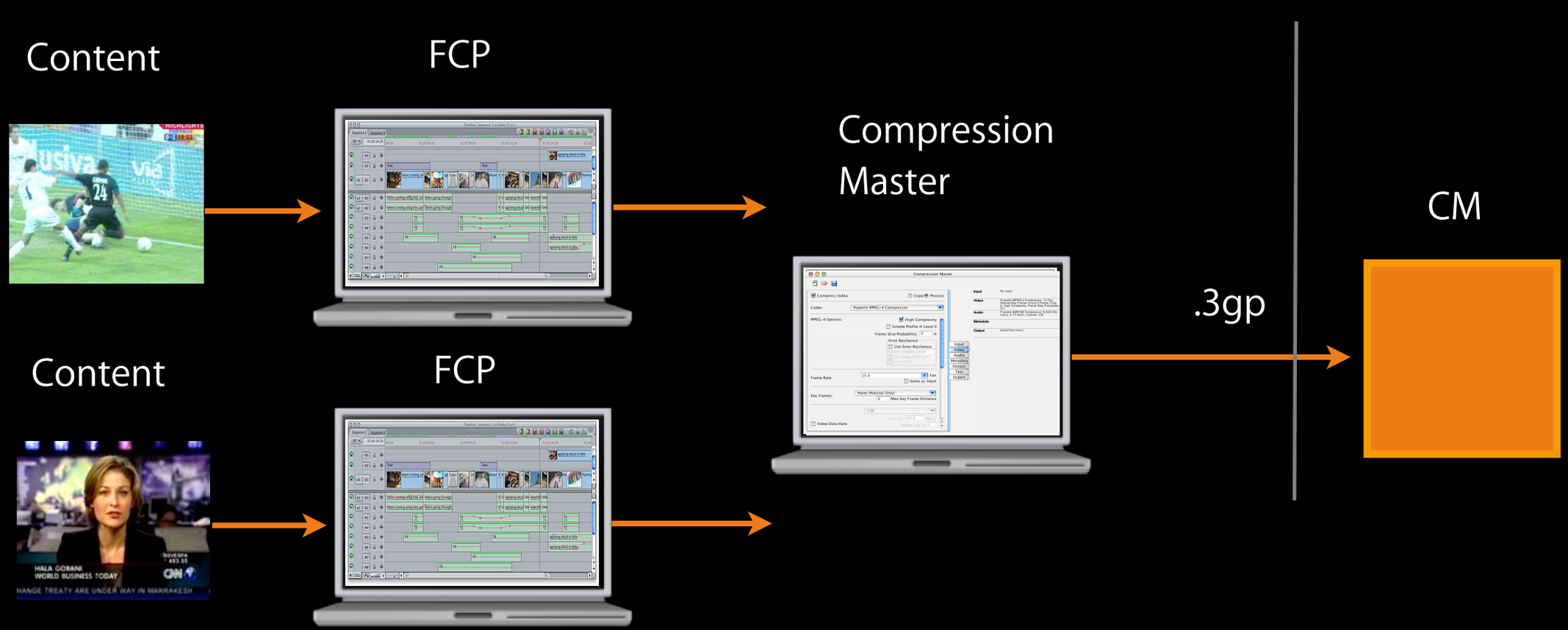
…What about the quality of d/l files?…

- You are not constrained to the Bandwidths limitations—higher bit rates
- D/L time—not a good experience to wait for "breaking news"
- You pay per packet!!!!!
- The operator has a cost for every packet!!!

Medium Scaled Operations

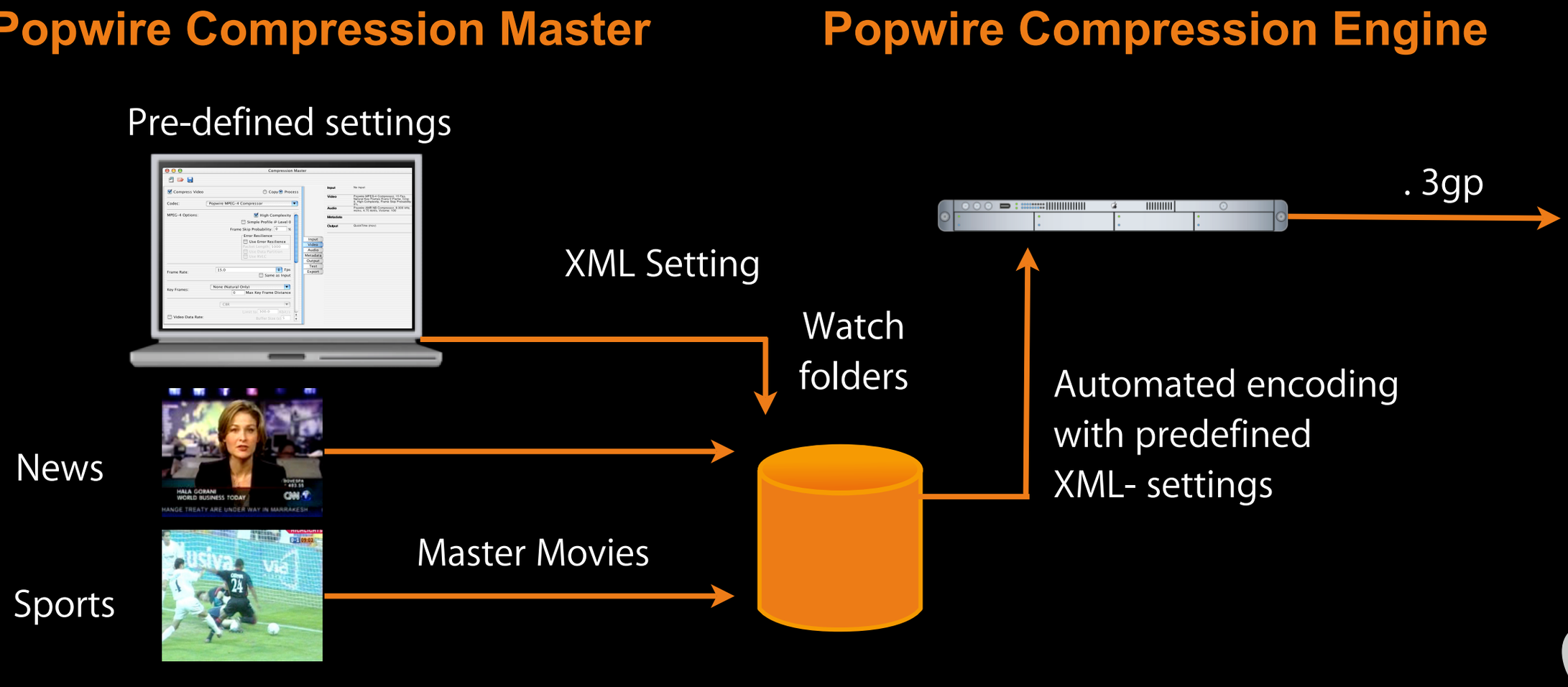
- Content is acquired/edited from several sources
- Batch encoding is required

Operators domain



Large Scaled Operations

- Enabling a seamless encoding process
- Automated encoding—create ”Watch folders” for incoming content of a pre-defined type
- **Compression Master** is used to create a set of pre-defined bit rates and formats, **Compression Engine** gets material from watch folder and ensures quick encoding as soon as material is coming in



Heavy Stuff…and Mission Critical

- Average portal prepares 95 minutes of content/day
- One minute video average input format = 512 Mbyte
- Every clip converted to 5 different bit rates/formats
- 95 x 60Mbyte x 5 = 243,000 M material to be processed, **daily**
- News and sports—turnover time less than 1 minute

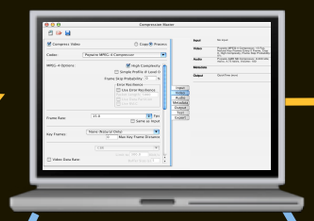
- 2 news feed, 10 times x 30 sec = 10 min
- Financial information 5 x 1 min = 5 min
- Traffic info 30 sec every 15 min's in rush hour =12 min
- Music video 4 per day 4 x 3 min = 12 min
- 4 Sports 24 min
- Sports news 2 x 2 min
- Goal/special events service 20 x 6 sec
- Entertainment 24 min
- Commercials 10% 8 min

Real World Example

Content owner/Creator

Compression Master

Post production



.3gp

QT

XML Settings
Done once

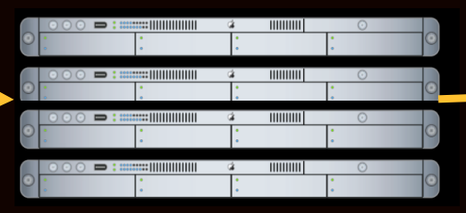
Video Server
GXF, Qclip etc

Watch folders

Operator

Compression Engine

MPEG-2



.3gp

Tape

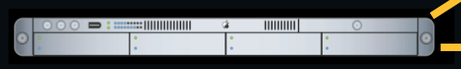
FCP

RAW,
MJPEG

MPEG-2

YUV

Edit, new commentary



Compression Engine

.3gp

Summary—Top 10 Key Success Factors

- Understand the operators biz; Model: Unity price, price per packet, how does the operator position its service etc.
- Fully integrated with existing production environment and legacy systems to obtain one automated workflow
- Time to showtime: breaking news must be breaking news
- The output formats shall fully support the standards set by 3GPP
- High quality source: don’t use ”pre-compressed” content
- Understand the network constrains, available bandwidth, prioritizing of services
- Optimized compression for distribution in wireless networks and displaying in mobile devices
- Streaming vs D/L. Treat a d/l exactly like a stream, every bit costs
- Be the expert, help your customer to understand the whole chain from content creation to distribution
- TEST!!!!!!

Wrap Up

Roadmap—Wednesday

	Russian Hill	Pacific Heights	Haight/ Ashbury	SOMA
9:00	711 Audio and QuickTime		712 QuickTime for the Web	713 Introduction to QuickTime Interactivity
10:30			714 Large-Scale Webcasting: Macworld Keynote Case Study	715 QuickTime Interactivity Tools
12:00				
2:00	716 Advanced QuickTime Programming Techniques		717 3GP: Myth Versus Reality	718 AppleScript and QuickTime
3:30			719 Administering QuickTime Streaming Server	720 Content Creation for Mobile Phones: Top 10 Success Factors
5:00			721 WiFi and 3G: Let the Games Begin	722 Advanced QuickTime Interactivity

Roadmap—Thursday

	The Mission	Haight/ Ashbury	SOMA
9:00		723 The Real Story About MPEG-4 Visual Licensing	724 What's New With QuickTime VR?
10:30		725 QuickTime and Enhanced CDs	726 Cutting-Edge Projects Using QuickTime VR
12:00			
2:00	727 QuickTime Streaming Server Programming	728 Produce a Listening Party With QuickTime	729 Industrial-Strength Encoding
3:30		FF011 QuickTime Feedback Forum	
5:00			

Roadmap—Friday

	Pacific Heights	The Marina
9:00		
10:30	730 QuickTime Alternative Programming Environments	
12:00		
2:00		731 Internet Application Development: The New Frontier
3:30		
5:00		

Who to Contact

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http://developer.apple.com/wwdc2003/urls.html

For More Information

Documentation

3GPP

http://www.apple.com/quicktime

Popwire Technology

http://popwire.com

General Information

http://www.apple.com/quicktime

Developer Information

http://developer.apple.com/documentation

QuickTime Information

http://developer.apple.com/QuickTime

Do Not Miss!

Lab: QuickTime Content Creation

Meet with QuickTime content experts for daily content specific topics that are of special interest to you. Bring your own media and Powerbook. No appointment is needed—first-come, first-served.

Sacramento Room

Lab: QuickTime Development

Meet with Apple's QuickTime engineers. Each day will emphasize a specific QuickTime development topic. Bring your own code and Powerbook. No appointment is needed—first-come, first-served.

Sacramento Room

Lab Hours

Monday	12:00pm to 6:00pm
Tuesday	9:00am to 6:00pm
Wednesday	9:00am to 6:00pm
Thursday	9:00am to 4:30pm
Friday	9:00am to 6:00pm

Q&A

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http://developer.apple.com/wwdc2003/urls.html

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